most interesting chapter on the work of Darwin and Wallace and the beliefs held by biologists a hundred years ago, is followed by two chapters on the elementary principles of heredity. These are dealt with in such a way that readers with no previous knowledge of genetics can readily understand later chapters describing recent ideas on the mechanism of evolution in the light of modern genetics. There is no glossary, but none is needed since technical terms are so well defined in the text.

Two courses are open to an author when writing a book on a subject on which there is enough available information to fill many large volumes; either he can make an elementary survey of the whole field or he can select certain parts which illustrate important principles and treat them in detail. Dr. Sheppard has chosen the second of these alternatives, and, because he deals with the results of work done in his own particular field, the book contains much of interest to geneticists. Thus the banded and the unbanded forms of the snail, *Cepaea nemoralis*, are used to illustrate the effect of habitat on gene frequencies, the non-random mating habits of the moth, *Panaxia dominula*, are discussed in relation to the maintenance of its polymorphism of wing colour, and there is a description of the experiments which disprove Goldschmidt's opinion that the mimetic forms of the swallow-tail, *Papilio dardanus*, arose fully perfected as the result of single mutations.

Simple Mendelian genetic principles have been widely applied during the past thirty years, but it is only recently that the advances in the knowledge of population genetics have started to make an impact in medicine. Amongst physicians there is a growing realization that their science is a branch of biology, that people cannot be divided into the sick and the healthy, and that what they have called disease is but a varying degree of deviation of a character from a mode. There is a widespread desire to understand population genetics and apply it to medicine. One hundred years of intensive research into the environmental causes of diseases have left us with a large number of common conditions, in the ætiology of which exogenous factors are known to play a part but are only half the answer. It is appreciated that the other half is the inherited constitution which is of such importance in determining how the body will react to various stresses and there is much hope that study of this genetic basis will lead to the prevention of conditions such as cancer, rheumatism, duodenal ulcer and coronary thrombosis.

Genetics is occupying an increasingly large part in the training of physicians and public health doctors, and no better introduction to population genetics can be recommended than this attractive book. Perhaps it is because of Dr. Sheppard's close association with medical research during the past five years that he has been able to write a book so suitable for doctors. There is a notable absence of the frightening mathematical formulæ which discourage the non-geneticist who would like to know something about population genetics. Initial apprehension of the subject is soon dispelled and the reader becomes more and more interested in successive chapters. The final nine pages of conclusions on evolution and selection are particularly good; the ways in which natural selection acts, described in the previous chapters, are discussed in relation to the evolutionary changes shown by the fossil record and the diversity of living things on the earth at the present time; the final conclusion is that natural selection is not only competent to account for the facts of adaptation and evolution, but is the only hypothesis which will explain them adequately. Dr. Sheppard is to be congratulated on writing this excellent book, and it is difficult to know whether geneticists, students of biology or those in other fields will derive most pleasure and information from reading it.

R. B. MCCONNELL

McLeish, John and **Snoad, Brian.** *Looking at Chromosomes.* London and New York, 1958. MacMillan. Pp. vii + 88. Price 16s.

MORE THAN ONE HALF of the space of this excellent little book is taken up by forty-eight superb photographic plates which illustrate the various stages of mitosis and meiosis of a single organism, *Lilium regale*. The rest is a clear and simple description of these processes which is illustrated by another eighteen figures in the text. Considering the fundamental importance of mitosis and meiosos, their treatment in most textbooks

of zoology and botany (and even of genetics) is painfully inadequate. This book will thus be quite indispensable to all teachers of biology, and as its price is moderate, it can also be warmly recommended to students, particularly of genetics.

Basing the description on a single species has the drawback that there is probably no organism in which all phases are equally clear. The weak point of *Lilium regale* is the prophase of the first meiotic division. Perhaps the value of the book could be still further enhanced if in a later edition the treatment of the first meiotic prophase could be supplemented by a few photographs from a different species (perhaps a grasshopper).

H. GRÜNEBERG

Robinson, Roy. *Genetic Studies of the Rabbit.* The Hague, 1958. Martinus Nijhoff. Reprinted from *Bibliographia Genetica*, **17**, pp. 2 + 229-558. Price 36 guilders.

IN THE EARLY YEARS of this century, all four laboratory rodents, rabbit, guinea-pig, rat and mouse provided ample material to test the validity of the re-discovered Mendelian laws, and subsequently they served for studies in comparative genetics. They were later joined by the American deer-mouse, *Peromyscus*, which is not yet a tame animal, and very recently by the golden hamster which is much more docile. However, progress with these six species has been very unequal, and the mouse on account of its small size and consequent cheapness is now by far the best-known object of mammalian genetics. With some regret, it must be admitted that genetic research in guinea-pig and rat has virtually come to a standstill, and that the genetics of the rabbit is now actively studied in no more than two or three laboratories. We hope that this setback is only temporary, and that the interest in the genetics of these animals will one day revive. At any rate, the moment appears opportune to take stock of the situation and to bring together all the published information in the form of a monograph.

The author of that monograph, Mr. Roy Robinson, is not a professional scientist, but has come to take an interest in the subject from the Rabbit Fancy. Mr. Robinson has undertaken a very difficult task as a labour of love and without the facilities which full-time employment in an academic department affords. Moreover, he has filled a gap which, it seems, would otherwise have persisted for some time to come. Under these circumstances, the professional geneticists may well be grateful to Mr. Robinson for his devoted labours. They will, I feel sure, be inclined to overlook certain obvious shortcomings (most of which are not of a very serious nature) and set against them the positive usefulness of the work; one of the points where Mr. Robinson scores over most professional geneticists is his intimate knowledge of the breeds of the Fancy.

H. GRÜNEBERG

HEREDITY

Stowe, Leland, *Crusoe of Lonesome Lake.* New York, 1957. Random House. Pp. xviii + 234. Price $3.50.

TWO YEARS OR SO AGO, Leland Stowe, internationally known journalist and Pullitzer prize-winner, visited the Ralph Edwards homestead on Lonesome Lake, east of the Bella Coola Valley in British Columbia, to get a first-hand picture of this remarkable family and their achievement. It is doubtful indeed if Stowe realized that he was making a contribution to the nature-nurture discussion; but implications for science are inherent throughout his book. It is a biographical and not a scientific study, and is based not on statistically treated numbers but on one family; yet it shows clearly that, given good, sound hereditary stock and strong enough motivation, a severely deprived educational environment is not enough to hold mental development down, even slightly. It bears out this reviewer's personal observation and expectation that the pioneers of the Bella Coola (or for that matter any other self-selected outpost of civilization) can produce even superior children! It refutes any suggestion that environment, no matter how severely deprived culturally, will necessarily inhibit normal mental development, provided good native capacity and motivation are there to begin with.

In previous research studies of mental development of children reared in isolated environments —such as that first reported by Gordon in England for children whose school attendance was highly restricted because of their having to